

# Evaluation of a postgraduate examination for primary care: perceptions and performance of general practitioner trainers in the multiple choice paper of the Membership Examination of the Royal College of General Practitioners

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### WHAT IS ALREADY KNOWN IN THIS AREA

- Feedback from GP registrar candidates sitting the multiple choice paper (MCP) suggests that the paper has good face and content validity, although pressure of time is a problem.
- Candidates find the questions in the paper challenging but most believe they assess common or important problems in general practice.

### WHAT THIS WORK ADDS

- Most trainers in this study believed that the paper assessed knowledge of common or important topics relevant to general practice, that the majority of questions were appropriate, clear and unambiguous and that time pressure was not a problem.
- Trainers in this study performed significantly better overall compared to registrars and did so without making prior preparation.

### SUGGESTIONS FOR FURTHER RESEARCH

- Repeating the study with non-trainer GPs could provide further information on the validity of the MCP as an applied knowledge test appropriate for established GPs taking the MRCGP as well as those nearing completion of training

**Keywords:** attitudes, examination, general practice trainers, MRCGP,

### SUMMARY

This study aimed to investigate the performance of a sample of general practitioner (GP) trainers in the multiple choice paper (MCP) of the Membership Examination of the Royal College of General Practi-

tioners (MRCGP) and to obtain their views of the content of the paper and its relevance to general practice using a written knowledge test and self-administered questionnaire.

The participants were volunteer GP trainers in the Northern, Wessex, Kent,

Surrey and Sussex (KSS) and Northwest deaneries of the UK. The trainers completed a shortened version of an MRCGP MCP paper under examination conditions and provided feedback immediately afterwards.

Of 191 trainers invited to participate, 86 (45%) sat the paper and of these, 81 completed the questionnaire. Most trainers believed that the paper assessed knowledge of common or important topics relevant to general practice, that the majority of questions were appropriate, clear and unambiguous and that time pressure was not a problem.

Trainers performed significantly better compared to registrars overall, and in questions on medicine related to general practice and practice administration but not research methodology or critical appraisal. They did so without making prior preparation.

The findings from this group of trainers lend support to the face validity and content validity of the MRCGP MCP examination as an assessment of applied knowledge of general practice.

## INTRODUCTION

Most general practitioner registrars (GPRs) in the UK during their training, and some experienced general practitioners, sit the examination for Membership of the Royal College of General Practitioners (MRCGP). This includes a multiple choice paper (MCP) to assess their knowledge and its application relevant to general practice. For GP trainers, possessing the MRCGP is a requirement in most deaneries in the UK.

The MCP is designed to test knowledge and application of knowledge in the context of UK general practice. Questions cover three broad domains. The first is 'medicine' related to general practice comprising general medicine, surgery, medical specialties (such as dermatology, ear, nose and throat, ophthalmology), psychiatry

and women's and child health, the second is 'practice administration' and the third is 'critical appraisal and research methodology'. Approximately 80% of candidates pass at each 'diet', with a pass mark of approximately 65%. About 25% of passing candidates gain a merit, which requires a score of around 78%.

The MCP uses a number of question formats (including single best answer and extended matching questions and pictorial images) to test the breadth and depth of candidates' knowledge. A test specification is used to ensure adequate coverage of the content as defined in the Regulations for Examinations<sup>1</sup> and a detailed MRCGP syllabus which itself has been externally validated to reflect contemporary UK general practice.<sup>2</sup>

The paper has demonstrated consistently high reliability with Cronbach's alpha at 0.92 (October 2005). The performance of individual questions in each paper is also reviewed using classical test theory, which underpins the evaluation and refinement of poorly performing questions by an expert group. The importance of assessing the validity of postgraduate medical examinations has recently been emphasised yet evaluation of assessments is often overlooked.<sup>3,4</sup>

While the MCP has been criticised as 'obtuse', feedback from GPR candidates sitting the MCP in a recent study suggested that the paper had good face and content validity, although pressure of time was a problem.<sup>5,6</sup> The findings also suggested that while candidates found the questions in the paper challenging most believed they assessed common or important problems in general practice.

There has to date been no research as to how GP trainers perceive the MCP of the MRCGP examination or whether they believe the knowledge being tested is appropriate for practice. Indeed, other than candidates themselves sitting a paper and a small number of RCGP examiners, test security generally precludes wider access to the question bank. This study set

out to investigate GP trainers' perceptions of the format and content of the MCP, their perceived role in helping registrars prepare for the paper and their performance in the examination. In doing so we were investigating the face and content validity of the MCP in the MRCGP examination.

## RESEARCH AIM

To obtain the views of the GP trainers on the questions in the MCP of the MRCGP and to investigate their performance on a shortened version of the paper sat under examination conditions.

## METHODS

In 2004 GP trainers in four English deaneries, Northern, Wessex, KSS and North-west, were invited by letter to sit a shortened version of the (October 2003) MCP and to complete a feedback questionnaire. They were offered anonymised feedback on their performance against their peers. Participants would not be identifiable in the study and were advised that no preparation was required before sitting the paper.

Questions were carefully selected by one of us (CB) to represent the content of the full MCP, which is determined by a blueprint based on a balance of questions across clinical medicine (65%), research and statistics (20%) and administration (15%). The clinical medicine questions are further selected to ensure that the subspecialties are evenly represented. The shortened paper was constructed to replicate this blueprint as far as possible, and to include the different question formats as well. The paper consisted of 100 questions to be completed in 90 minutes, half the usual number and time respectively. Volunteers sat the paper in four centres under examination conditions and, as the questions were 'live' material, were asked to view them as confidential.

Mean scores for trainers were obtained for the questions overall and, for questions relating to medicine, critical reading and research and practice administration.

As all the questions were taken from the previous diet of the MRCGP MCP examination, candidates' scores (anonymised) were available for direct comparison with those of the trainers. Mean scores for candidates were obtained for the questions overall, and for questions relating to medicine, critical reading and research and practice administration, and compared with those of the trainers.

Quantitative analysis of scores overall, and for questions relating to medicine, critical reading and research and practice administration, was carried out using SPSS version 12.0.1 for Windows using analysis of variance (ANOVA) for differences between candidates and trainers.

The feedback questionnaire asked trainers to respond, using a Likert scale (strongly agree, agree, disagree or strongly disagree), to statements concerning the relevance, perceived difficulty and formats of the questions used in the paper. Views were also sought on the trainers' role in supporting their registrars taking the paper. Amplification of views was sought through free text answers. The responses were then categorised from which themes were generated.<sup>7</sup> These were not, however, the result of a formal qualitative analysis. The questionnaire had been validated in a previous study.<sup>8</sup>

Finally, the age of the trainers and time since sitting the MRCGP examination were requested.

## RESULTS

One-hundred and ninety-one trainers were invited to participate of whom 86 (45%) sat the paper. Of these, 81 completed questionnaires about the paper. It is, however, unclear why five trainers failed to complete the questionnaire.

## Views of trainers about the content of the paper

### *Relevance of questions*

Sixty-five (80.2%) trainers believed the paper assessed common problems and 69 (85.2%) thought that it assessed important problems in general practice. Seventy-six (93.8%) believed the paper assessed knowledge of relevant problems and 62 (76.5%) thought that it assessed their ability to apply their knowledge to problems in general practice. Seventy-six (93.8%) believed that overall the questions were clear and 73 (90.1%) thought that they were appropriate for registrars at the end of vocational training.

### *Difficulty of questions*

The majority of trainers described the questions on general medicine (60.5%), surgery (66.7%), psychiatry (60.5%), women's health (63%), child health (56.8%) and administration (54.3%) as either very easy or fairly easy. However, most trainers reported critical appraisal (79.0%) and research methodology (82.8%) questions as being difficult or very difficult. Eleven (13.6%) trainers found questions on electrocardiogram (ECG) interpretation difficult. Fifty-five trainers amplified their responses:

- ECG questions – three principal explanations were given: lack of familiarity with ECGs, the fact that reporting was usually provided by secondary care and the quality of reproduction of ECGs in the paper.

‘ECGs – I don’t do these any more, the cardiologists report them.’

- Research methodology questions – 18 trainers (22.2%) referred to difficulty with questions on research methodology with lack of familiarity in general practice and

failure to update knowledge being the most frequent reasons given.

‘Positive predictive values, meta-analysis, always had a mental block about these and need to prepare specially for these questions.’

### *Inappropriate questions*

Eighteen (22.2%) trainers believed that the paper contained inappropriate questions. Fifteen trainers cited examples of which seven related to critical appraisal or research methodology.

Lack of familiarity and relevance to the day-to-day work of the GP were the reasons stated.

‘Working GPs don’t frequently go back to basics on meta-analysis.’

‘Critical appraisal and research methodology [are not relevant] to everyday general practice, why have NICE?’

‘Some of the critical appraisal questions too difficult.’

### *Format of questions*

Single best answer questions were seen as fairly easy or very easy by 75 (92.6%) trainers whereas only 37 (45.7%) saw extended matching questions as fairly easy or very easy.

Simpler formats were preferred and single best answers on clinical issues were seen as easier than more complex formats of extended matching questions and algorithms with more answer options.

‘Spending more time matching than applying clinical knowledge.’

‘Algorithm – too many possible combinations.’

Helping registrars prepare

While 55 (67.9%) trainers believed they had a role in helping registrars pass the MCP, 22 (27.2%) disagreed.

- Signposting – comments about this question suggested that they perceived their role as one of signposting registrars to sample questions provided by the RCGP as well as to read widely.

‘Encourage use of PEP CDs, discuss format of papers and likely content, type of questions.’

‘It is a very small part of the job as really a GP trainer is to facilitate this by providing PEPs but other things more important in training.’

- Experiential learning – interestingly, only three trainers specifically cited experiential learning from patients as a method of preparation.

‘Past papers, practice books, lots of surgeries, i.e. experience.’

‘Regular case discussion during the year, problem-based teaching/tutorials.’

Time

In contrast to reported feedback from candidates in the full examination, time was not a problem for trainers in the shortened test with 74 (91%) believing they had sufficient time to complete the paper. However, a shorter examination and the absence of a high-stakes scenario would tend to reduce the time pressure on trainers, possibly explaining the different views.

Performance of GP trainers

The scores for 86 trainers were compared with the scores in identical questions for the 865 candidates who had sat the paper (Table 1). Trainers were significantly better than candidates in the overall score ( $P = 0.002$ ), medicine related to general practice ( $P = 0.014$ ) and practice administration ( $P < 0.001$ ) but not critical appraisal or research methods ( $P = 0.9$ ).

**Table 1** Comparison of candidates' vs trainers' scores for total score, medicine, research and administration

		<i>n</i>	Mean	Standard deviation	95% Confidence interval for mean		Minimum	Maximum	<i>P</i> (ANOVA)
					Lower bound	Upper bound			
Total score	Candidates	865	73.88	10.49	73.18	74.58	25.96	95.19	0.002
	Trainers	86	77.60	9.20	75.63	79.58	39.42	94.23	
Medicine	Candidates	865	74.80	10.28	74.11	75.49	26.32	96.05	0.014
	Trainers	86	77.63	8.79	75.75	79.52	39.47	92.11	
Research	Candidates	865	76.03	23.00	74.49	77.56	0.00	100.00	0.90
	Trainers	86	75.69	21.17	71.15	80.23	0.00	100.00	
Administration	Candidates	865	68.40	15.41	67.37	69.43	5.88	100.00	< 0.001
	Trainers	86	78.73	12.57	76.03	81.42	41.18	100.00	

Age and time since passing MRCGP

Of the 80 trainers who gave their age, 49 (60.5%) were aged between 40 and 49 years with 15 (18.5%) and 16 (19.8%) aged between 30 to 39 and 50 to 59, respectively. These trainers were significantly more likely to be between 40 and 49 than GPs nationally (Table 2).

Time since sitting the MRCGP examination varied significantly. Of the 79 trainers declaring this, eight trainers (9.9%) had sat the exam less than ten years previously, 48 (59.2%) between ten and 19 years, whereas 23 (28.4%) has done so more than 20 years ago.

DISCUSSION

The majority of participating trainers who provided feedback believed the paper assessed common or important problems relevant to general practice, and that the content was appropriate to test doctors at the end of their vocational training.

As the trainers were volunteers they may not have been representative of all trainers, given only a 45% response rate to attempting a high challenge knowledge test. Although the current MRCGP is also voluntary and registrars self-select to sit the paper, the proportion of registrars sitting the examination is significantly greater than the proportion of trainers in this study. We accept that trainers with less commitment to educational development or those with less clinical knowledge or

confidence might have excluded themselves from the study. However, those who participated covered a wide range of ages and time interval since taking the MRCGP. The deaneries chosen were those in which the researchers were known and had access to trainer groups. This may therefore have increased the likelihood of trainer participation. The assurance of confidentiality may not have been sufficient to persuade some trainers to participate and a lower than ideal response rate was anticipated given the anxiety and fear of failure any assessment can generate. A more recent pilot study of non-trainer GPs has raised similar issues.

Given that age tends to be a negative factor in performance it is interesting to note that the trainers who declared their age were more likely to be in the middle (40–49 years) of their age group with fewer younger and older than this compared with GPs nationally.<sup>9</sup>

Organisational and personal factors might have inhibited some trainers from participating as the MCP was only offered once in each deanery. It is also possible that those trainers who did participate were more positive towards the examination.

The findings, however, suggest that these GP trainers perceived the MCP to be a valid test of applied knowledge of current general practice.

Lending further support to this was the fact that trainers performed significantly better overall in the MCP than registrars, and also performed better in questions on

**Table 2** Comparison of age ranges of trainers in study with national data for general practitioners

Age range	Trainers in study	(%)	National data (2004)	(%)
<30	0	(0)	545	(1.6)
30–39	15	(18.5)	8521	(25.0)
40–49	49	(60.5)	12918	(37.9)
50 +	16	(19.8)	12168	(35.7)
Totals	86*	(100)	34085	(100)

Missing data = 6; Chi-Square = 19.546; DF = 3; P value < 0.001.

medical aspects of general practice, which they did even without preparation. They also scored better on practice administration, perhaps not surprisingly, as the trainers were all partners in general practice. However, they found questions on research methodology and critical appraisal difficult, and correspondingly did not perform significantly better in this area, suggesting that their skills in this area were less well developed. A recent qualitative study also found that GP trainers believed this was a difficult area and felt they lacked confidence in teaching evidence-based medicine. They often believed that registrars knew more about evidence-based medicine than themselves and did not have the time or skills to effectively access or appraise the evidence.<sup>10</sup>

The testing of knowledge in general practice and other medical specialties, which is continuously being expanded through research, has been described as an attempt to test the 'transience of truth'.<sup>11</sup> Increased patient access to new knowledge through the media and the internet also challenges professionals, including GPs, not only to increase their knowledge base, but also to incorporate this within their everyday practice. Testing the shifting sands of knowledge in a valid and reliable way remains a challenge for professional examinations.

Yet much of the curriculum for general practice remains unchanged since the publication of *The Future General Practitioner*.<sup>12</sup> GPs still see the whole spectrum of clinical medicine in their surgeries. Entirely new diseases are few, while others, notably diabetes, musculoskeletal medicine and cardiovascular disease, are increasing in prevalence. However, management of these conditions, with which GPs must keep up to date, has undergone radical changes in recent years.

Although previous evidence suggests that physicians' knowledge declines with time from qualification and raises the question of how, or whether, practitioners keep up to date with the evidence base of prac-

tice, this study suggests that this may not be the case.<sup>13</sup> Evidence suggests that experienced GPs make management decisions from fewer items of information than trainees, rendering the assessment of knowledge from basic medical sciences less appropriate for experienced practitioners.<sup>14</sup>

The careful construction of the MCP which tries to reflect the balance of common or important clinical problems may also explain why experienced clinicians in this study performed well overall on the paper.

As the MCP aims to assess the application of knowledge in general practice, we believe that this study may help inform the development of a valid assessment of GPs throughout their professional practice. Repeating the study with non-trainer GPs could provide further information on the validity of the MCP as an applied knowledge test appropriate for established GPs taking the MRCGP as well as those nearing completion of training. While high response rates would be a challenge in any future study we believe that this is an important area for further research.

## CONFLICTS OF INTEREST

The authors are members of the MCP core group of the MRCGP examination.

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